In the Claims

The listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method for estimating [[a]] an I/Q imbalance parameter of a receiver, comprising the steps of:

transmitting a first signal modulated by a first and a second modulated carrier through only a single modulation path at a transmitter;

receiving the first signal demodulated by a first demodulated carrier and a second demodulated carrier, respectively through [[a]] first and [[a]] second demodulation paths at a receiver;

transmitting a second signal modulated by the first and the second modulated carrier through the single modulation path at the transmitter;

receiving the second signal demodulated by the first and the second demodulated carrier respectively through the first and second demodulation paths at the receiver; and

deriving the I/Q imbalance parameter of the receiver according to the first signal and the second signal transmitted by the transmitter and the demodulated first and second signals received by the receiver, wherein the first and second signals are symmetrical in the frequency domain.

2. (Original) The method of claim 1, wherein the first modulated carrier is a real-value modulated carrier, the second modulated carrier is an imaginary-value modulated carrier, the modulation path is one of I_channel and Q_channel, the first demodulation path is a I_channel, the second demodulation path is a Q_channel, the first demodulated carrier is a real-value demodulated carrier, and the second demodulated carrier is an imaginary-value demodulated carrier.

3. (Previously presented) The method of claim 1, wherein the real part of the first signal is symmetric while the imaginary part of the first signal is anti-symmetric in the frequency domain.

4. (Previously presented) The method of claim 3, wherein amplitudes of the real and imaginary part of the first signal are the same in the frequency domain.

5. (Previously presented) The method of claim 1, wherein the real part of the second signal is anti-symmetric while the imaginary part of the second signal is symmetric in the frequency domain.

6. (Previously presented) The method of claim 5, wherein amplitudes of the real and imaginary part of the second signal are the same in the frequency domain.

7. (Original) The method of claim 1, wherein the amplitude of the real and the imaginary part of the first and second signals are either +1 or -1.

8. (Currently amended) A method for transmitter I/Q imbalance estimation comprising the steps of:

transmitting a third signal modulated by a first modulated carrier through only a single first modulation path;

transmitting a fourth signal modulated by a second modulated carrier through only a single second modulation path, wherein the third signal and the fourth signal are symmetrical in the frequency domain;

receiving the third signal demodulated by a first demodulated carrier through a demodulation path;

receiving the fourth signal demodulated by a second demodulated carrier through the demodulation path; and

deriving an I/Q imbalance of the transmitter according to the demodulated third signal and the demodulated fourth signal signals.

9. (Original) The method of claim 8, wherein the first modulated carrier is a real-value modulated carrier, the second modulated carrier is an imaginary-value modulated carrier, the first modulation path is a I_channel, the second modulation path is a Q_channel, the demodulation path is one of I_channel and Q_channel, the first demodulated carrier is a real-value demodulated carrier, and the second demodulated carrier is an imaginary-value demodulated carrier.

10. (Previously presented) The method of claim 8, wherein the real and the imaginary part of the third and the fourth signal are symmetric in the frequency domain.

11. (Previously presented) The method of claim 10, wherein amplitudes of the real and imaginary part of the third and the fourth signal are the same in the frequency domain.

12. (Currently amended) An apparatus for estimation of transmitter I/Q imbalance in a communication system, the apparatus comprising:

a signal generator for generating a first and a second signals, wherein the first and the second signals are symmetrical in the frequency domain;

a transmitter for transmitting the first signal modulated by a first modulated signal and the second signal modulated by a second modulated carrier through <u>only one of a</u> first modulation path [[and]] <u>or</u> a second modulation path; and

an estimator for deriving an I/Q imbalance parameter of the transmitter according the first signal and the second signal received by a receiver.

13. (Original) The apparatus of claim 12, wherein the signal generator further comprises an IFFT processor.

14. (Previously presented) The apparatus of claim 12, wherein the real and the imaginary part of the first and the second signal are symmetric in the frequency domain.

15. (Previously presented) The apparatus of claim 12, wherein amplitudes of the real and the imaginary part of the first and the second signal are the same in the frequency domain.

16. (Currently Amended) An apparatus for estimation of receiver I/Q imbalance in a communication system, comprising:

a signal generator for generating a first and a second signal; a transmitter for transmitting the first signal modulated by a first modulated carrier and the second signal modulated by a second modulated carrier, wherein both the first and the second signals are transmitted through a single I_channel or through a single Q_channel;

a receiver for receiving the first signal demodulated by a first demodulated carrier through a I_channel and demodulated by a second demodulated carrier through a

Q_channel, and receiving a second signal demodulated by a first demodulated carrier through a I_channel and demodulated by a second demodulated carrier through a Q_channel; and

an estimator for deriving an I/Q imbalance parameter of the receiver from the first signal and the second signal ~~signals~~ received by the receiver and the first and second signals transmitted by the transmitter.

17. (Original) The apparatus of claim 16 the receiver further comprising a FFT processor.

18. (Previously presented) The apparatus of claim 16, wherein the real part of the first signal is symmetric while the imaginary part of the first signal is anti-symmetric in the frequency domain.

19. (Previously presented) The apparatus of claim 18, wherein amplitudes of the real and the imaginary part of the first signal are the same in the frequency domain.

20. (Previously presented) The apparatus of claim 16, wherein the real part of the second signal is anti-symmetric while the imaginary part of the second signal is symmetric in the frequency domain.

21. (Previously presented) The apparatus of claim 20, wherein amplitudes of the real and the imaginary part of the second signal are the same in the frequency domain.

22. (Original) The apparatus of claim 16, wherein the real and the imaginary part of the first and the second signal are either +1 or -1.